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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
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DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/674,090

Applicant(s)

Yoav Eichen

Examiner

Jeffrey Siew

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-42 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 11, 17, 27, 28, 32 & 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
- 4) ☒ Interview Summary (PTO-413) Paper No(s) 9
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Drawings***

1. Figure 30 does not contain part 901 as referred to specification page 57 line 12.

#### ***Specification***

2. In the Brief Description of Drawings Figure 1 is referred to but there are Figures 1A and 1B in the drawings. Appropriate correction is required. Similarly corrections are required for Figures 2,5,6,7,9,10,12,13,21 & 25.

#### ***Claim Objections***

- A) In claims 2, 3, 27 28,32 & 33 the terms (c1), for example, are deemed unconventional and improper. It is recommended that such designation be eliminated.

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- B) The phrase "any one of the preceding" in claim 17 is improper. It is strongly recommended that claim numbers be used.
- C) In claim 11 the term "polyanyline" is misspelled. Correction/clarification is requested.

*Claim Rejections - 35 USC § 112*

3. Claims 1-34,36 & 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) The phrase "**either to one or more** of at least two electrodes **and/or** on the substrate" renders claims 1-34,36 & 42 confusing. It is unclear as to what alternatives are being referred to.

B) Claim 11 depends on claim 6 and refers to monomers but the phrase lacks antecedent basis.

*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9, 17-25, 30 & 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Mrocskowski et al (US5,284,748 Feb, 8, 1994).

Mrocskowski et al teach a method for detecting the occurrence of binding or complex forming reaction between specific substances by utilizing a binding reaction to modify an electric circuit (see whole doc. esp. abstract). They teach a diagnostic element with a biogenic substance e.g. antigen coated with onto a non-conductive based between a pair of electrical conductors. Antibodies with gold or platinum i.e. nucleation sites are reacted with antigen to be bound (see also col. 9 line 26). The particles form aggregates of electrically conductive particles each modify the circuit. The particles are then coated with conductive substance. The device is used for assessing antibodies and antigens in blood serum of human patient (see also col. 5 line 60 to col. 6 line 12). They teach that the nucleation sites may be gold (see col. 2 line 47). In Figure 1 & 2 layer 23 and 24 form positive and negative terminals or electrodes (see col. 4 line 59) They test conductivity with an ohmmeter functionally connected to layers 23 & 24 of figure 1 & 2. (see col. 4 line 56). They teach that channels have a width of 10 microns. Figure 8 shows a device with multiple reactions sites in columns and rows. (see col. 10 line 47-60). They also teach the reducing agent hydroquinone solution for coating (see col. 15 line 26).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12-16 & 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mrocskowski et al (US5,284,748 Feb. 8, 1994) in view of JP 04-148669 May 21 1992.

The teachings of Mrocskowski et al are described previously.

Mrocskowski et al do not teach DNA.

JP 04-148669 teach a molecule securing device in which a chain is formed by using two aluminum electrodes installed on a substrate (see whole document). Between electrode 1 & 2 an electrical field is charged via leads 3 and 4 (see page 4 and Figs. 1 & 2). The device is applied to DNA molecules (see page 2).

One of ordinary skill in the art would have been motivated to apply teachings of DNA binding to Mrocskowski et al's device in order to detect DNA interactions. As it was well known in the art to detect DNA for disease mutations and as JP-04-148669 teach the successful use of

DNA binding to provide a conducting connection between electrodes, it would have prima facie obvious to bind DNA in order to detect target DNA.

6. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mrocskowski et al (US5,284,748 Feb. 8, 1994) .

The teachings of Mrocskowski et al are described previously.

Mrocskowski et al do not teach explicitly a kit.

Mrocskowski et al's reagents into a kit in order to allow the practioner easy access to all the reagents to perform the assay. It was well known and commonly practiced in the art to incorporate reagents into kits. It would have been prima facie obvious to put Mrockowski et al's reagents into a kit so that one would be able to have the reagents to construct and perform the diagnostic assay efficiently.

7. Claims <sup>5</sup>~~34~~-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mrocskowski et al (US5,284,748 Feb. 8, 1994) in view of Hisada et al (US5,914,505 June 22, 1999) .

The teachings of Mrocskowski et al are described previously.

Mrocskowski et al do not teach explicitly of junction s forming diode.

Hisada et al teach a semiconductor integrated circuit for comprising first and second conductor and junction diode (see whole doc. esp.col.3) .

One of ordinary skill in the art would have been motivated to combine Hisada et al's integrated circuit and Mrocskowski et al's device in order to provide for a multiarray device with high number of reaction sites. Mrocskowski et al already teaches a multiarray device (see Figure 8) and Hisada et al's semiconductor device provided internal circuits from malfunctioning (see col. 1 line 43). It would have been prima facie obvious to combine Hisada et al's semiconductor device with Mrocskowski et al's device in order to provide device with highly multiple reaction sites with lower malfunctioning errors.

8. Claims 10,11,26-28 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mrocskowski et al (US5,284,748 Feb. 8, 1994) in view of Yang et al (US5,563,424 Oct. 8, 1996)

The teachings of Mrocskowski et al are described previously.

Mrocskowski et al do not teach explicitly of polyaniline.

Yang et al teach polyaniline for advantages of better conduction (see whole doc. esp. col. 9 line 32).

One of ordinary skill in the art would have been motivated to apply Yang et al's polyaniline to Mrocskowski et al's device in order to provide increase efficiency in conduction. Yang et al state that polyaniline provides improved efficiency at lower operating voltages. It would have been prima facie obvious to apply Yang et al's polyaniline so that increased conduction would provide for better detection of the bound target.



### SUMMARY

9. No claims allowed.

### CONCLUSION

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Siew whose telephone number is (703) 305-3886 and whose e-mail address is Jeffrey.Siew@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner is on flex-time schedule and can best be reached on weekdays from 6:30 a.m. to 3 p.m. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (703)-308-1152.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist for Technology Center 1600 whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Center numbers for Group 1600 are Voice (703) 308-3290 and Fax (703) 308-4556 or (703) 308-4242.

*Jeffrey Siew*  
Jeffrey Siew

Sept 4, 2001